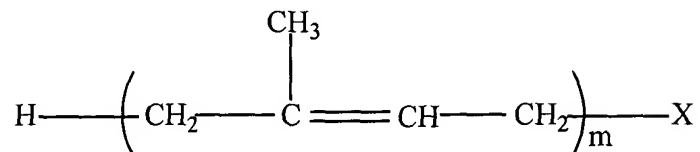


WHAT IS CLAIMED IS:

1. A composition comprising:  
water;  
an emulsifier;  
at least one compound represented by Formula I:

Formula I



wherein "m" is an integer from about 3 to about 33; and

wherein "X" is a substituent group selected from the group consisting of: (a) hydroxyl and acetyloxy; (b) halo; (c) formyl, mono-fluoroacetyloxy, trifluoroacetyloxy, monochloroacetyloxy, propionyloxy, butyryloxy, stearoyloxy, benzoyloxy, 3,5-dimethylbenzoyloxy, and 4-ethylbenzoyloxy; (d) methoxy, ethoxy, phenoxy, 2-pyridyloxy, 2-benzothiazolyloxy, 2-benzoxazolyloxy, trimethylsilyloxy, dimethyl t-butylsilyloxy, methylthio, ethylthio, phenylthio, tolylthio, 2-thiazolinythio, 2-benzothiazolythio, 2-benzoxazolythio, and 2-pyridylthio; (e) dimethylphosphonoxy, diethylphosphonoxy, and diphenylphosphonoxy; (f) methylsulfinyl, ethylsulfinyl, propylsulfinyl, phenylsulfinyl, and 4-tolylsulfinyl; (g) methylsulfonyl, ethylsulfonyl, propylsulfonyl, phenylsulfonyl, and 4-tolylsulfonyl; (h) methoxycarbonyloxy, ethoxycarbonyloxy, propoxycarbonyloxy, phenoxycarbonyloxy, and 4-tolylloxycarbonyloxy; (i) N,N-dimethylcarbamoyloxy, N,N-diethylcarbamoyloxy, N,N-dipropylcarbamoyloxy, N,N-diphenylcarbamoyloxy, and N-phenyl-N-ethylcarbamoyloxy; (j) trimethylammonium bromide, triethylammonium iodide and diphenylethylammonium bromide; (k) dimethylsulfonium bromide, diethylsulfonium iodide, dipropylsulfonium bromide, and phenylethylsulfonium bromide; and (l) monophosphate, diphosphate, and triphosphate.

2. The composition of Claim 1, wherein "m" is from about 8 to about 23.
3. The composition of Claim 1, wherein "m" is from about 10 to about 18.

4. The composition of Claim 1, wherein the emulsifier comprises one or more selected from the group consisting octylphenol, polyoxyethylene, polyethyleneglycol fatty acid esters, ethylene glycol fatty acid esters, glycerol fatty acid esters, sucrose fatty acid esters, propylene glycol fatty acid esters, and sorbitan fatty acid or sorbitan fatty acid ester.

5. The composition of Claim 1, wherein the compound has a concentration from about 1 ppm to about 100 ppm.

6. The composition of Claim 1, wherein the compound has a concentration from about 0.01 wt% to about 80 wt% with reference to the total weight of the composition.

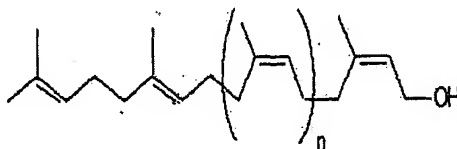
7. A composition comprising:

water;

an emulsifier;

at least one compound represented by Formula II:

Formula II



wherein "n" is an integer from 0 to about 30.

8. The composition of Claim 7, wherein "n" is from about 5 to about 20.

9. The composition of Claim 7, wherein "n" is from about 7 to about 15.

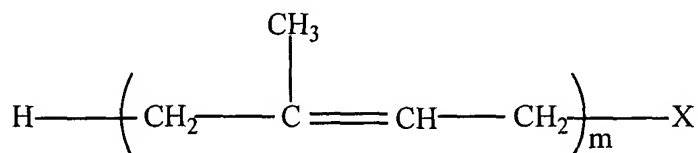
10. The composition of Claim 7, wherein the compound is undecaprenol or dodecaprenol.

11. A method of treating a plant, comprising:

providing a plant; and

contacting the plant or a portion thereof with at least one compound represented by Formula I:

Formula I



wherein "m" is an integer from about 3 to about 33;

wherein "X" is a substituent group selected from the group consisting of: (a) hydroxyl and acetyloxy; (b) halo; (c) formyl, mono-fluoroacetyloxy, trifluoroacetyloxy, monochloroacetyloxy, propionyloxy, butyryloxy, stearoyloxy, benzoyloxy, 3,5-dimethylbenzoyloxy, and 4-ethylbenzoyloxy; (d) methoxy, ethoxy, phenoxy, 2-pyridyloxy, 2-benzothiazolyloxy, 2-benzoxazolyloxy, trimethylsilyloxy, dimethyl t-butylsilyloxy, methylthio, ethylthio, phenylthio, tolylthio, 2-thiazolinylthio, 2-benzothiazolylthio, 2-benzoxazolylthio, and 2-pyridylthio; (e) dimethylphosphonoxy, diethylphosphonoxy, and diphenylphosphonoxy; (f) methylsulfinyl, ethylsulfinyl, propylsulfinyl, phenylsulfinyl, and 4-tolylsulfinyl; (g) methylsulfonyl, ethylsulfonyl, propylsulfonyl, phenylsulfonyl, and 4-tolylsulfonyl; (h) methoxycarbonyloxy, ethoxycarbonyloxy, propoxycarbonyloxy, phenoxycarbonyloxy, and 4-tolylloxycarbonyloxy; (i) N,N-dimethylcarbamoyloxy, N,N-diethylcarbamoyloxy, N,N-dipropylcarbamoyloxy, N,N-diphenylcarbamoyloxy, and N-phenyl-N-ethylcarbamoyloxy; (j) trimethylammonium bromide, triethylammonium iodide and diphenylethylammonium bromide; (k) dimethylsulfonium bromide, diethylsulfonium iodide, dipropylsulfonium bromide, and phenylethylsulfonium bromide; and (l) monophosphate, diphosphate, and triphosphate.

12. The method of Claim 11, wherein the portion of the plant contacted with the compound is one or more selected from the group consisting of a seed, a shoot, a root, a leaf, a bulb, a fruit, a stem, a trunk, a stalk, a cane, a flower, a flower bud and a surface of the foregoing.

13. The method of Claim 11, wherein the plant is selected from the group consisting of vegetable or fruit plants, grain plants and ornamental plants.

14. The method of Claim 13, wherein the vegetable or fruit plants are selected from the group consisting of tobacco, grape, strawberry, tomato, bell tomato, cucumber, potato, radish, cabbage, bean sprout, red pepper and spinach; wherein the grain plants are selected from the group consisting of rice, barley, corn, millet, bean and wheat; and wherein the ornamental plants are selected from the group consisting of chrysanthemum, rose, lily and gerbera.

15. The method of Claim 11, wherein "m" is from about 8 to about 23.

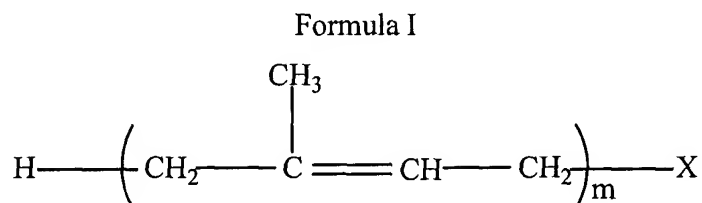
16. The method of Claim 11, wherein "m" is from about 10 to about 18.
17. The method of Claim 11, wherein "X" is hydroxyl or acetyloxy.
18. The method of Claim 11, wherein the compound is contacted with the plant or a portion thereof in the form of liquid.
19. The method of Claim 11, wherein the compound is contacted with the plant or a portion thereof in the form of powder.
20. The method of Claim 11, wherein the compound is contacted with the plant or a portion thereof along with a non-Formula I substance.
21. The method of Claim 20, wherein the non-Formula I substance comprises at least one of an emulsifier and water.
22. The method of Claim 21, wherein the emulsifier comprises one or more selected from the group consisting octylphenol, polyoxyethylene, polyethyleneglycol fatty acid esters, ethylene glycol fatty acid esters, glycerol fatty acid esters, sucrose fatty acid esters, propylene glycol fatty acid esters, and sorbitan fatty acid or sorbitan fatty acid ester.
23. The method of Claim 21, wherein the compound contacting the plant or a portion thereof has a concentration from about 0.01 ppm to about 1000 ppm.
24. The method of Claim 21, wherein the compound contacting the plant or a portion thereof has a concentration from about 1 ppm to about 100 ppm.
25. The method of Claim 11, wherein the compound is contacted with the plant or a portion thereof by sprinkling liquid or powder comprising the compound over the plant or the portion thereof.
26. The method of Claim 11, wherein the compound is contacted with the plant or a portion thereof by immersing at least a portion of the plant in a liquid comprising the compound.
27. The method of Claim 11, wherein the compound is contacted with the plant or a portion thereof by injecting a composition comprising the compound into the plant or the portion thereof.
28. The method of Claim 11, further comprising cutting at least a portion of the plant so as to contact the compound with an interior of the plant.



41. The method of Claim 37, wherein the compound contacting with the plant or the portion thereof comprises one or more different forms thereof, and wherein the different forms of the compound have different "n".

42. The method of Claim 37, wherein the plant is selected from the group consisting of vegetable or fruit plants, grain plants and ornamental plants.

43. A plant treated with a chemical compound, comprising:  
a body of a plant, the body comprising an outer surface; and  
at least one compound of Formula I on the outer surface:



wherein "m" is an integer from about 3 to about 33;

wherein "X" is a substituent group selected from the group consisting of: (a) hydroxyl and acetyloxy; (b) halo; (c) formyl, mono-fluoroacetyloxy, trifluoroacetyloxy, monochloroacetyloxy, propionyloxy, butyryloxy, stearoyloxy, benzoyloxy, 3,5-dimethylbenzoyloxy, and 4-ethylbenzoyloxy; (d) methoxy, ethoxy, phenoxy, 2-pyridyloxy, 2-benzothiazolyloxy, 2-benzoxazolyloxy, trimethylsilyloxy, dimethyl t-butylsilyloxy, methylthio, ethylthio, phenylthio, tolylthio, 2-thiazolinylothio, 2-benzothiazolylothio, 2-benzoxazolylothio, and 2-pyridylthio; (e) dimethylphosphonoxy, diethylphosphonoxy, and diphenylphosphonoxy; (f) methylsulfinyl, ethylsulfinyl, propylsulfinyl, phenylsulfinyl, and 4-tolylsulfinyl; (g) methylsulfonyl, ethylsulfonyl, propylsulfonyl, phenylsulfonyl, and 4-tolylsulfonyl; (h) methoxycarbonyloxy, ethoxycarbonyloxy, propoxycarbonyloxy, phenoxycarbonyloxy, and 4-tolylloxycarbonyloxy; (i) N,N-dimethylcarbamoyloxy, N,N-diethylcarbamoyloxy, N,N-dipropylcarbamoyloxy, N,N-diphenylcarbamoyloxy, and N-phenyl-N-ethylcarbamoyloxy; (j) trimethylammonium bromide, triethylammonium iodide and diphenylethylammonium bromide; (k) dimethylsulfonium bromide, diethylsulfonium iodide, dipropylsulfonium bromide, and phenylethylsulfonium bromide; and (l) monophosphate, diphosphate, and triphosphate.

44. The plant of Claim 43, wherein the plant body is one or more selected from the group consisting of a seed, a shoot, a root, a leaf, a bulb, a fruit, a stem, a trunk, a stalk, a cane, a flower and a flower bud.

45. The plant of Claim 43, wherein the plant is selected from the group consisting of vegetable or fruit plants, grain plants and ornamental plants.

46. The plant of Claim 45, wherein the vegetable or fruit plants are selected from the group consisting of tobacco, grape, strawberry, tomato, bell tomato, cucumber, potato, radish, cabbage, bean sprout, red pepper and spinach; wherein the grain plants are selected from the group consisting of rice, barley, corn, millet, bean and wheat; and wherein the ornamental plants are selected from the group consisting of chrysanthemum, rose, lily and gerbera.

47. The plant of Claim 43, wherein "m" is from about 8 to about 23.

48. The plant of Claim 43, wherein "m" is from about 10 to about 18.

49. The plant of Claim 43, wherein X is hydroxyl or acetyloxy.

50. The plant of Claim 43, wherein the compound is on the outer surface along with at least one non-Formula I substance.

51. The plant of Claim 50, wherein the non-Formula I substance comprises at least one of an emulsifier and water.

52. The plant of Claim 43, wherein the compound on the outer surface is in a scientifically traceable amount.

53. The plant of Claim 43, wherein the compound is in an amount from about  $0.001\mu\text{g}/\text{cm}^2$  to about  $100\mu\text{g}/\text{cm}^2$ .

54. The plant of Claim 43, wherein the compound is in an amount from about  $0.01\mu\text{g}/\text{cm}^2$  to about  $10\mu\text{g}/\text{cm}^2$ .

55. A method of producing the chemical-compound-treated plant of Claim 43, the method comprising:

providing the plant body comprising the outer surface; and

contacting the outer surface with at least one of the compounds of Formula I.

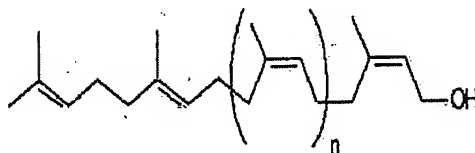
56. The method of Claim 55, wherein the compound is contacted with the plant body in the form of liquid.





70. The plant of Claim 68, wherein "n" is from about 7 to about 15.
71. The plant of Claim 68, wherein "n" is 8, 9 or 15.
72. The plant of Claim 68, wherein the polyprenol comprises one or more different forms thereof, and wherein the different forms of the polyprenol have different "n".
73. The plant of Claim 68, wherein the plant body is one or more selected from the group consisting of a seed, a shoot, a root, a leaf, a bulb, a fruit, a stem, a trunk, a stalk, a cane, a flower and a flower bud.
74. A plant growth regulator for increasing crop yield of a plant, the regulator comprising a compound represented by Formula II below:

Formula II



wherein "n" is 0 or a positive integer.

75. The plant growth regulator according to Claim 74, wherein "n" is 8 or 9.
76. The plant growth regulator according to Claim 74, wherein the plant is selected from the group consisting of vegetable or fruit plants, cereal plants, and flowering plants.
77. The plant growth regulator according to claim 76, wherein the vegetable or fruit plants are selected from the group consisting of tobacco, grape, strawberry, tomato, bell tomato, cucumber, potato, radish, cabbage, bean sprout, red pepper and spinach; wherein the cereal plants are selected from the group consisting of rice, barley, corn, millet, bean and wheat; and wherein flowering plants are selected from the group consisting of chrysanthemum, rose, lily and gerbera.
78. The plant growth regulator according to Claim 74, further comprising an emulsifier.
79. The plant growth regulator according to Claim 79; wherein the emulsifier comprises one or more selected from the group consisting octylphenol, polyoxyethylene, polyethyleneglycol fatty acid esters, ethylene glycol fatty acid esters, glycerol fatty acid

esters, sucrose fatty acid esters, propylene glycol fatty acid esters, and sorbitan fatty acid or sorbitan fatty acid ester.

80. A method of growing a plant, comprising:  
providing a plant; and  
applying the plant growth regulator according to Claim 74 to a seed of a plant or a portion thereof.

81. The method according to Claim 80, wherein the plant growth regulator is applied by immersing the seed in a liquid comprising the plant growth regulator.

82. The method according to Claim 80, wherein the plant growth regulator is applied by spraying the plant growth regulator onto the seed of the plant or the portion thereof.

83. The method according to Claim 80, wherein the portion of the plant is one or more selected from the group consisting of a shoot, a root, a leaf, a bulb, a fruit, a stem, a trunk, a stalk, a cane, a flower and a flower bud.

84. The method according to Claim 80, wherein the plant growth regulator is applied with a concentration of the compound at from about 0.01 ppm to about 1000 ppm.

85. A method of obtaining polyprenol, comprising:  
providing part of a plant;  
mixing the plant part with an organic solvent;  
extracting organic substances from the plant part into the organic solvent, the organic substances comprising a polyprenol derivative; and  
transforming the derivative to the polyprenol in the presence of a base and a reducing agent.

86. The method of Claim 85, wherein the reducing agent comprises pyrogallol.

87. The method of Claim 85, wherein the derivative is acetylated polyprenol.

88. The method of Claim 87, wherein the step of transforming comprises hydrolyzing the acetylated polyprenol.

89. The method of Claim 85, further comprising isolating the polyprenol.

90. The method of Claim 85, wherein the polyprenol comprises one or more different forms having different numbers of a repeated unit thereof.

91. The method of Claim 85, further comprising powdering the isolated polyprenol.

92. The method of Claim 85, wherein the plant is selected from the group consisting of a cotton plant, a horse chestnut plant, a tobacco plant, a lords and ladies plant, a silver birch plant, a gingko plant and a soybean plant.

93. The method of Claim 85, wherein the organic solvent is selected from the group consisting of ethanol, methanol, benzene and a mixture of one or more of the foregoing.